

REMARKS

The present Amendment amends claims 1, 4-6, 10, 14, 15, 18 and 20 and leaves claims 2, 3, 7-9, 11, 16 and 17 unchanged. Therefore, the present application has pending claims 1-11, 14-18 and 20.

In paragraph 3 of the Office Action the Examiner rejected claims 1, 14, 15 and 20 under 35 USC §112, first paragraph as allegedly containing subject matter which was not described in the specification in such a way as to reasonable convey to one skill in the relevant art that the inventors at the time the application was filed has possession of the claimed invention. This rejection is traversed for the following reasons. Applicants submit that the specification and drawings as originally filed provide sufficient information so as to enable one skill in the art to determine that the inventors of the present application had possession of the claimed invention at the time the application was filed. Therefore, reconsideration and withdrawal of this rejection is respectfully requested.

Particularly, the Examiner objects that the newly added feature "a frame which integrates said disk storage media and said control unit into a single integrated package" was not disclosed in the specification. Applicants do not agree. This feature of the present invention is discussed, for example, on page 8, lines 22-24, page 9, line 26 and various other locations in the Substitute Specification as filed on January 5, 2001. However, in order to expedite prosecution of the present application the above noted feature regarding "a frame which integrates said disk storage media and said control unit into a single integrated package" was deleted from each of the claims, namely claims 1, 14, 15 and 20. Accordingly, this rejection is rendered moot.

Therefore, based on the above, Applicants respectfully request the Examiner to reconsider and withdraw the above noted rejection of claims 1, 14, 15 and 20 under 35 USC §112, first paragraph.

Claims 1-3, 15-17 and 20 stand rejected under 35 USC §103(a) as being unpatentable over Ram (U.S. Patent No. 5,941,969) in view of Riedel (article entitled "Active Disks-Remote Execution for Network-Attached Storage"); claim 14 stands rejected under 35 USC §103(a) as being unpatentable over Kanai (U.S. Patent No. 5,862,403) in view of Riedel; claims 4, 5 and 18 stand rejected under 35 USC §103(a) as being unpatentable over Ram in view of Riedel and further in view of Bakow (U.S. Patent No. 6,058,394); claims 7-11 stand rejected under 35 USC §103(a) as being unpatentable over Ram in view of Riedel and further in view of Delo (U.S. Patent No. 6,363,499); and claim 6 stands rejected under 35 USC §103(a) as being unpatentable over Ram in view of Riedel and further in view of Bakow and Fong U.S. Patent No. 6,292,879). These rejections are traversed for the following reasons. Applicants submit that the features of the present invention as recited in claims 1-11, 14-18 and 20 are not taught or suggested by Ram, Riedel, Kanai, Bakow, Delo or Fong whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

Amendments were made to the claims in order to more clearly describe features of the present invention not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, amendments were made to the claims to more clearly recite that the present invention is directed to unique features of a disk unit connectable to a server or a

client computer. According to the present invention the disk unit is connectable to the server and the client computers via a network and the server computer manages a function that the client computer requests to have executed and manages data stored in the disk unit.

As per the present invention the disk unit includes a disk storage media for storing data and a control unit which includes a memory for storing a function and function information relating to execution of the function that are sent from the server computer. According to the present invention the control unit executes the function in response to a function execution request from the client computer and examines, based on the function information, whether an access from external of the disk unit to the data stored in the disk storage media is allowable or not and restricts accesses to the data stored in the disk storage media during execution of the function.

By the use of the above described features of the present invention the server computer does not have to acquire file access rights whenever a file is to be opened and examination of whether access to data in the disk unit is allowed or to can be offloaded from the server to the disk unit. Therefore, by use of the present invention as described above effective restriction access is achieved in the disk unit itself.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references of record particularly Ram, Riedel, Kanai, Bakow, Delo or Fong whether taken individually or in combination with each other as suggested by the Examiner.

The above described features of the present invention are not taught or suggested by the primary reference Ram. Ram teaches a storage system having a

client computer, a network processor, a host/file storage processor and a data storage device. As taught by Ram, the host/file storage processor includes a disk controller and a bridge wherein the network processor receives and analyzes a request from the client computer and the host/file storage processor determines the location of the buffer on the requesting network processor for storing data to be transmitted and instructs the disk controller so that data retrieved by storage devices is directly deposited into the buffer on the network processor over the interconnected bus. Further, as taught by Ram the disk controller causes the data storage device to retrieve the requested data and sends the result directly to the buffer of the requesting network processor via the bridge.

Ram teaches that the disk controller receives meta data which includes information on the type and access mode for the file. However, as is understood by those of ordinary skill in the art meta data does not provide information regarding access restriction to the data stored on the disk storage media. Further, there is no teaching or suggestion in Ram that the disk controller uses such meta data so as to examine whether an access to the data stored on the disk storage media is allowable or not and to restrict access to the data during execution of the function as in the present invention. Ram simply discloses a disk controller which is bound to the information in the meta data which provides information of the result of an analysis of the client request by the network processor.

The present invention as now more clearly recited in the claims differs substantially from that taught by Ram being that as described above the server computer does not have to acquire the file access right whenever a file is to be opened and the examination of whether access is permitted to the disk unit is

offloaded to the disk unit itself so that effective restriction of access is achieved in the disk unit.

Therefore, Ram fails to teach or suggest that the control unit included in the disk unit executes a function in response to a function execution request from the client computer and examines, based on the function information, whether an access from external of the disk unit to the data stored in the disk storage media is allowable or not and restricts accesses to the data stored in the disk storage media during execution of the function as recited in the claims.

The above noted deficiencies of Ram are also evident in Riedel. Riedel teaches a single integrated network attached storage package which integrates a disk storage media and a control unit. However, Riedel similar to Ram does not disclose the division of the network connected components as in the present invention wherein one of the components creates the function information such as a server computer as recited in the claims of the present application and another of the components examines, based on the function information, whether the access from external of the disk unit to the data stored in the disk storage media is allowable or not and restricts accesses to the data stored in the disk storage media during execution of the function such as a control unit of the disk unit as recited in the claims. Thus, Riedel suffers from the same deficiencies relative to the features of the present invention as recited in the claims as Ram.

Therefore, as is quite clear from the above, Riedel fails to teach or suggest the features of the present invention wherein the control unit executes a function in response to a function execution request from the client computer and examines, based on the function information, whether an access from external of the disk unit

to the data stored in the disk storage media is allowable or not and restricts accesses to the data stored in the disk storage media during execution of the function as recited in the claims.

Kanai suffers from the same deficiencies relative to the present invention as recited in the claims as Ram and Riedel. Kanai simply teaches a continuous data server apparatus having a plurality of buffer memory units for storing the continuous data read out by the data memory control units to be given to the communications control unit. The Examiner's attention is directed to col. 14, lines 33-34 of Kanai. Thus, as is quite clear, Kanai fails to teach or suggest a disk unit which executes functions independent of any other apparatus such as, for example, the central control device 10 taught by Kanai.

Therefore, Kanai the same as Ram and Riedel fails to teach or suggest that the control unit executes a function in response to a function execution request from the client computer and examines, based on the function information, whether an access from external of the disk unit to the data stored in the disk storage media is allowable or not and restricts accesses to the data stored in the disk storage media during execution of the function as recited in the claims.

The above noted deficiencies of Ram, Riedel and Kanai are not supplied by any of the other references of record whether taken individually or in combination with each other. Particularly, the above noted features of the present invention as recited in the claims shown above not to be taught or suggested by Ram, Riedel or Kanai are also not taught or suggested by Bakow, Delo or Fong whether taken individually or in combination with each other as suggested by the Examiner.

Bakow very similar to the teachings of Ram, Riedel and Kanai simply teaches the use of a manager server and an agent server which executes a query from client computers. However, it is quite clear that Bakow does not teach or suggest that, for example, the databases themselves 18 are constructed in a manner so as to execute a function independent of the other elements in the network and to perform an examination of an access so as to determine whether an access from external of the disk unit to the data stored in the storage media is allowable or not and restricts accesses to the data stored in the storage device during execution of the function as in the present invention.

Both Delo and Fong suffer from the same deficiencies relative to the features of the present invention as recited in the claims. Namely, both Delo and Fong teach the use of a server separate from the disk unit. However, there is no teaching or suggestion in either of Delo or Fong that the disk unit in and of itself includes a control unit which executes a function in response to a function execution request from the client computer and examines, based on the function information, whether an access from external of the disk unit to the data stored in the storage media is allowable or not and restricts accesses to the data stored in the data storage medium during execution of the function as in the present invention.

Therefore, based on the above, Applicants submit that the features of the present invention as now recited in claims 1-11, 14-18 and 20 are not taught or suggested by Ram, Riedel, Kanai, Bakow, Delo or Fong whether taken individually or in combination with each other as suggested by the Examiner. Accordingly, reconsideration and withdrawal of the above noted rejections based on Ram, Riedel, Kanai, Bakow, Delo and Fong is respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-11, 14-18 and 20.

In view of the foregoing amendments and remarks, Applicants submit that claims 1-11, 14-18 and 20 are in condition for allowance. Accordingly, early allowance of claims 1-11, 14-18 and 20 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (501.38590X00).

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Carl I. Brundidge', is written over a horizontal line.

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